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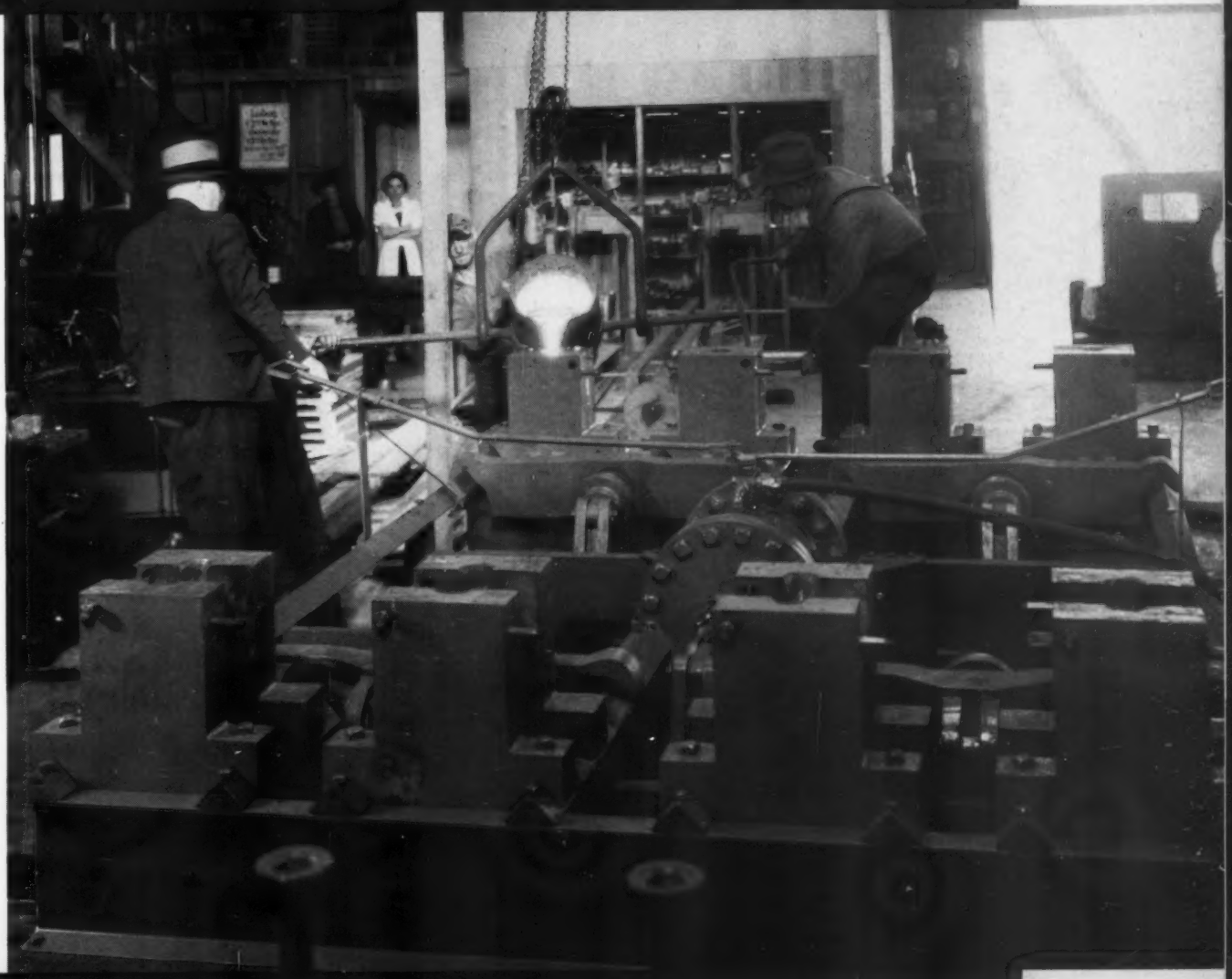
American Foundryman

A PUBLICATION PRESENTING ASSOCIATION AND CHAPTER ACTIVITIES



November
1938

Advancement in Foundry Sand Practice

THE first organized effort in our country toward a study of foundry sands was undertaken by a joint Committee of the National Research Council, in cooperation with the American Foundrymen's Association, October 31, 1921. Since that time, tremendous advances have been made in all lines of sand research, all of which have benefited foundrymen in proportion to the common sense employed in the utilization of this knowledge.

In the several Committees, functioning under the sponsorship referred to above, methods for sand testing and control have been worked out to a degree considered both practical and scientific. Not all the desired information for testing and control is available yet, but the methods and apparatus in use today are extremely helpful in foundry practice.

Applied sand technology has not only helped foundrymen, both small and large, to further economies and better control, but the application of this knowledge also has helped the sand producers greatly, to the end that we now have better relationship between producer and consumer. This is as it should be; it is the result of cooperation and the exchange of ideas all along the line.

Great advances have been made in sand preparation and reclamation. The widespread use of clays, and the use of modern mixing and blending equipment has made possible new and different foundry sand mixtures, both in the core room and on the foundry floor. Testing and control go hand in hand with preparation and reclamation.

The American Foundrymen's Association has, without interruption, sponsored research activities in all fields of sand work. The industry has profited from this work in great measure. The results of all the investigations have broadened our knowledge. Further educational work is necessary on the correct interpretation and application of this knowledge to assure its successful use in foundry practice.

Henry B. Hanley,

Director, A.F.A.

Mr. Hanley is foundry manager, The American Laundry Machinery Co., Rochester, N. Y., and has been active on the subject of foundry sands for the past 20 years. He has been connected with sand activities in the A.F.A. from the inception of this work. He is the author of several papers, including the International Exchange Paper on Sands to the Paris Congress, and for many years has been advisor and consultant on foundry sands. He is now serving as a Director of the American Foundrymen's Association.

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American Foundryman

CONTENTS

November, 1938

Volume I **No. 5**

	Page
Sand Research, by *H. B. Hanley*	Inside Front Cover
Foreman Training—An Important Management Responsibility	2
Interest and Attendance Increase at Iowa Conference	3
First Chicago Chapter—Purdue University Conference a Success	4
Committee Plans Details for Cornell Conference	6
A.F.A. to Participate in International Foundry Congress	7
F. A. Melmoth to Present Exchange Paper to I.B.F.	7
Apprentice Committee to Sponsor 1939 Contest	8
J. M. Darke Made Life Member	8
George B. Koch, Old Time Member, Retires	8
December Chapter Meetings	8
Chapter Activities	9
Abstracts, by *E. J. Ash*	15

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Foreman Training—
An Important Management Responsibility

By A. F. A. Committee on Foreman Training

INDUSTRIAL management, as a whole, for many years has had adequate policies covering all phases of plant operations and industrial relations. At least, such policies have been definitely a part of top managements purpose in the conduct of the business. Unfortunately, we cannot say that industrial management, as a whole, has *made effective* adequate policies covering all phases of plant operation and industrial relations.

It must be admitted that the manner and method of establishing and making management policies effective have varied greatly in different plants, and that, in many instances, severe penalties have resulted because policies that might have prevented trouble were not made effective.

In some plants, policies have been reduced to written or printed form, and all executives, foremen, supervisors and workers fully informed. Checks have been provided to insure that the supervisory force maintained such policies and periodic ratings called attention of workers to any shortcomings. In other plants, such policies have been definite enough in the plans and thinking of management, but little or no real effort made to publicize or make them effective. The great majority probably operate somewhere between these two extremes.

Industrial Relations Most Important

If asked today to indicate the management function most important to satisfactory operation, most industrial managers would, without hesitation, name industrial relations.

Industrial plants may today be classified into two groups so far as industrial relations problems are concerned.

(a) Those operating under a collective bargaining agreement, generally with an organization affiliated with an outside organization, since plant unions, to a large degree, have been outlawed.

(b) Those still unorganized but still subject to all the pressure that may legally be applied, to coerce workers into unions, under existing laws.

Regardless of which of these two conditions confronts any plant, it is safe to say that never before have definite policies and uniform administration of such policies been so necessary.

If you are already bargaining collectively, it is of major importance that uniform procedure be maintained and that certain management prerogatives be preserved. The right of employment and discharge, of promotion based on merit rather than on seniority, and many other fundamental rights of management will be under constant pressure.

If you are not already bargaining collectively, you probably have no objection to the major principles of collective bargaining, but hope to protect your plant from a form of collective bargaining guided and controlled by radical elements outside your organization. You can only hope to do so by making uniformly effective company policies so basically fair that their enforcement will not leave disgruntled individuals or minority groups who may be used by organizers as an entry to your organization.

Your foremen, in their daily contacts with their men, will, in either case, make or break any program of industrial relations you may plan.

Analyze Your Foremen

Did you ever analyze your own foreman group to determine for what particular qualifications each of your foremen or supervisors were originally selected for the job they now hold? If you will do so, you will find that in nine cases out of ten they were selected almost entirely because of experience or outstanding mechanical ability in the kind of work they were selected to supervise. If you will go further and analyze their background of education and training and handling of people, you will find that you have no real right to expect them to provide a satisfactory administration of your policies without a proper training for such duties.

It is management's responsibility, and an important one, to provide this training.

Committee Solicits Suggestions

The committee of the American Foundrymen's Association on Foremen's Training hope to provide, at the next annual convention, a program that may be helpful to management in providing such training. To that end, your committee is willing to act as a clearing house and solicits your suggestions or problems so that we may more intelligently plan our program.

The personnel of the committee is as follows:

A. D. Lynch, J. I. Case Co., Racine, Wis., Chairman.

George J. Leroux, National Malleable Casting Co., Cleveland, Ohio.

W. E. George, Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich.

Regional Meetings

Interest and Attendance Increases at Iowa Conference

APPROXIMATELY 200 foundrymen of the district met on Oct. 14 and 15 at the State University of Iowa to attend the sessions of the Third Annual Foundry Conference sponsored jointly by the Quad City Chapter of A.F.A., Northern Illinois-Southern Wisconsin Chapter and the Northern Iowa Foundrymen's Association. The program presented was the most interesting and attendance was higher (75 more than last year) than any previous foundry conference held at the university. The great interest was evident in the large amount of discussion and the questions asked during the conference.

Subjects Cover Foundry Field

Devoted to the consideration of practical problems of melting, molding, core room practice, sand control, refractories and equipment in non-ferrous and gray iron foundries, the program got under way at 9:00 a. m., Friday, Oct. 14, with registration in the Chemistry Building on the campus of the university, where all sessions were held. P. T. Bancroft, Moline, Ill., presided at the opening meeting, held at 9:30 a. m., and introduced A. V. O'Brien, superintendent, manufactures laboratory, State University of Iowa, who welcomed those attending on behalf of Dean F. M. Dawson of the College of Engineering, originally scheduled to speak but who was unavoidably absent.

Discuss Core Problems

The first technical session was presided over by R. Holland, International Harvester Co., Rock Island, Ill., who introduced L. P. Robinson, Werner G. Smith Co., Cleveland. Mr. Robinson gave an interesting and instructive talk on "Core Room Problems." H. W. Dietert, Harry W. Dietert Co., Detroit, then spoke on "Curing Casting Defects Due to Sand." During his talk, Mr. Dietert illustrated by charts the properties of sands and how improper control of these properties may lead to defects. He also had a collection of castings showing various defects.

Following luncheon in the River Room, Iowa Union Building, the conference again convened in the Chemistry Building with H. E. Alex, Rock Island Arsenal, Rock Island, Ill., presiding. This session was devoted to a discussion of non-ferrous casting defects by C. V. Nass, Fairbanks Morse Co., Beloit, Wis. Following an intermission, A. E. Hageboeck, Frank Foundries Corp., Moline, Ill., assumed the chair and introduced M. J. Gregory, Caterpillar Tractor Co., Peoria, Ill., and chairman, Quad City Chapter, who gave an extremely interesting illustrated lecture on the methods used to produce gray iron castings in his plant. The title of Mr. Gregory's talk was "Producing Good Gray Iron."

Speaks on Research

The conference dinner was held in the Union Building at 6:30 p. m., Friday evening, with Prof. H. O. Croft, head, Dept. of Mechanical Engineering, State University of Iowa, presiding. Following an excellent dinner, Chairman Croft introduced Eugene Gilmore, president of the university, who spoke on the functions of the university and welcomed those attending. Presi-

Mechanical Engineering Building, State University of Iowa. This Building Houses the Foundry Department.

dent Gilmore was followed by H. Bornstein, director and past president of the American Foundrymen's Association and director of laboratories, Deere & Co., Moline, Ill., who gave an excellent talk on "Research." Mr. Bornstein described research as a state of mind and pointed out how technical associations, of which A.F.A. is one, assist in preventing duplication of work by dissemination of information.

Saturday Sessions

The Saturday morning session was devoted to equipment problems and methods. The first paper was entitled, "Pattern Problems" by J. E. Kolb, Caterpillar Tractor Co., Peoria, Ill. Mr. Kolb explained many of the points made in his paper by demonstrations, which made his presentation extremely interesting. John H. Diedrich, Blackhawk Foundry & Machine Co., Davenport, Iowa, acted as chairman during the presentation of the next paper on "Monolithic Linings," presented by R. E. Wilke, John Deere Tractor Works, Waterloo, Iowa. In his paper, Mr. Wilke described the use of a stiff mud to reline the cupola melting zone which gave excellent life and reduced frequency of patching. Fred W. Kirby, John Deere Spreader Works, East Moline, Ill., acted as chairman during the time R. W. Jennings presented his paper on "Molding Equipment." Mr. Jennings described a method, developed in his plant, which might be called a fatigue analysis which is used to check time studies. He gave examples of the use of this method on different types of molding machines and showed how the analyses checked with the time study data. The afternoon was devoted to golf and inspection of the university buildings.

Without doubt, this year's conference was the most interesting of the conferences thus far staged at the University of Iowa. Not only were the papers interesting but the discussion which followed indicated a wide interest in their contents. The committee which staged this conference is to be congratulated on a fine job. Membership of the committee is as follows: *Chairman*, Horace Deane, Deere & Co., Moline, Ill.; H. F. Henninger, International Harvester Co., Rock Island, Ill.; T. J. Frank, Frank Foundries Corp., Davenport, Iowa; A. V. O'Brien, superintendent, manufactures laboratory, State University of Iowa, Iowa City, Ia. The attendance committee was headed by A. E. Hageboeck, Frank Foundries Corp., Moline, Ill., while F. O. Gorman, John Deere Spreader Works, East Moline, Ill., was in charge of the golf committee.

First Chicago Chapter-Purdue University Conference a Success

THE FIRST foundry conference ever held at Purdue University under the joint auspices of the Chicago Chapter of the American Foundrymen's Association and the University was held Oct. 27, 28, 29, West Lafayette, Ind. Approximately 225 foundrymen from Illinois, Indiana, Ohio and Southern Michigan, attended sessions on practical foundry subjects relevant to the steel, malleable and gray iron divisions of the industry. The committee of the Chicago Chapter, headed by H. W. Johnson, Greenlee Foundry Co., Chicago, and the university committee, headed by W. A. Knapp, assistant dean of engineering, deserve credit for the excellent success of the conference.

Thursday morning, Oct. 27, was devoted to registration and a general session at which those attending were welcomed to the conference by Dean of Engineering A. A. Potter, on behalf of the university; L. H. Rudesill, Griffin Wheel Co., Chicago, on behalf of the Chapter; and R. E. Kennedy, secretary of the American Foundrymen's Association, on behalf of the national organization.

Following the general session, those attending divided into groups to attend sessions on gray iron, steel and malleable subjects. H. K. Briggs, Western Foundry Co., Chicago, acted as technical chairman of the first gray iron session where R. H. Bancroft, Perfect Circle Co.,

Campus View of Purdue University with Eliza Fowler Hall in Foreground.

Hagerstown, Ind., spoke on "Some Concepts of Raw Materials." P. B. Mulcahy, Citizens Gas & Coke Utility, Indianapolis, Ind., followed with a paper on "Foundry Coke and the Cupola." L. D. Reed, Whiting Corp., Harvey, Ill., presented a very interesting paper on "Materials Handling." The latter paper dealt with methods of handling cupola raw materials.

L. H. Rudesill, Griffin Wheel Co., Chicago, acted as technical chairman of the simultaneous session on malleable iron which discussed melting practices and materials of melting. The conventional air furnace was covered in a paper by that title by P. C. DeBruyne, Moline Malleable Iron Co., St. Charles, Ill. Duplexing operations were discussed by J. O. Klein, Southern Malleable Iron Co., St. Louis, Mo., and chairman of the St. Louis District Chapter of A.F.A. Operation of the Bracklesburg furnace was described by J. H. Lansing, Malleable Founders' Society, Cleveland. The final paper on the program was by Carl Wirth, Terre Haute Malleable & Mfg. Co., Terre Haute, Ind. Mr. Wirth discussed the refractory problem in melting malleable iron.

Steel Casting Manufacture

The technical chairman of the morning steel session was C. E. Westover, Burnside Steel Foundry Co., Chicago. H. A. Forsberg, Continental Roll & Steel Foundry Co., East Chicago, Ind., delivered an excellent talk on "Manufacture and Application of Steel Castings." The talk was illustrated by slides and a film and Mr. Forsberg, throughout his talk referred to some of the difficulties involved the production of large, heavy steel castings.

Following luncheon, the groups again met to discuss melting operations. G. P. Phillips, International Harvester Co., Chicago, was technical chairman of the gray iron session at which John Lowe, Centrifugal Fusing Div., Campbell Wyant & Cannon Foundry Co., Lansing, Mich., discussed "Cupola Melting Operations." Mr. Lowe's talk was extremely interesting and was accompanied by slides and pictures. In the malleable session, of which B. C. Yearley, National Malleable & Steel Castings Co., Chicago, was technical chairman, annealing practices were discussed. The conventional annealing practice was covered by L. E. Roby, Jr., Peoria Malleable Iron Co., Peoria, Ill., while C. C. Lawson, Wagner Malleable Iron Co., Decatur, Ill., described the practice in controlled atmosphere furnaces. Short cycle annealing practice was discussed by W. D. McMillan, International Harvester Co., Chicago.

The simultaneous session on steel melting was presided over by Bert Aamodt, National Malleable & Steel Castings Co., Chicago, as technical chairman. Converter, electric furnace and open hearth melting methods were discussed by F. B. Skeates, Link-Belt Co., Chicago; A. G. Gierach, American Manganese Steel Co., Chicago Heights, Ill.; and John W. Porter, American Steel Foundries, East Chicago, Ind., respectively.

Hear Concert Choir

The conference dinner was held in the Ball Room of the Purdue Memorial Union Building, Thursday evening, Oct. 27, and was attended by approximately 125. Following the dinner, the audience was delightfully entertained by the Purdue University Concert Choir under the direction of Albert P. Stewart. The choir presented five numbers which were enthusiastically received by the audience. Following this event, Assistant Dean Knapp introduced the speaker of the evening, Dr. J. L. Bray, head, school of chemical and metallurgical engineering, Purdue University, who gave an extremely interesting talk on sword fishing and described some of the hardships of the men who man these commercial fishing boats.

On Friday morning, Oct. 28, simultaneous sessions again were held on gray iron, steel and malleable iron. The gray iron session was led by Technical Chairman J. D. Burlie, Western Electric Co., Chicago. A. W. Weston, Chicago Hardware Foundry Co., North Chicago, Ill., discussed the causes and remedies for defects in gray iron castings due to sand while Martin Lefler, Oliver Farm Equipment Co., South Bend, Ind., described defects in such castings due to causes other than sand. M. A. Scott, Greenlee Foundry Co., Chicago, presented an extremely interesting paper on methods of gating castings through the riser and explained how some difficulties experienced by other gating methods may be overcome by the riser gating method.

Malleable Troubles Discussed

At the session on malleable iron, over which G. B. Stantial, Illinois Malleable Iron Co., Chicago, presided, L. F. Hartwig, Chicago Malleable Castings Co., Chicago, and H. W. Dietert, Harry W. Dietert Co., Detroit, discussed causes and remedies for defects in malleable castings. A. W. Gregg, Whiting Corp., Harvey, Ill., presided as technical chairman at the simultaneous steel session. C. W. Briggs, Steel Founders' Society of America, Cleveland, gave an extremely interesting discussion of design problems and explained the effect of solidification phenomena on steel castings and how it may be controlled to give a sound product. Following Mr. Briggs, F. A. Melmoth, Detroit Steel Casting Co., Detroit, discussed "Steel Casting Properties." During his talk, Mr. Melmoth emphasized the improvement in steel casting properties obtained by proper heat treatment. He particularly emphasized the effect of the heat treatment on the impact properties of the casting.

After luncheon, the entire attendance gathered in the lecture room of the Chemistry building to hear Prof. R. L. Farabee, Purdue University, discuss "Metallography for the Practical Foundryman." Prof. Farabee described the fundamentals underlying the use of the microscope in the foundry and pointed out how it could be used as a tool by the foundryman to give him in-

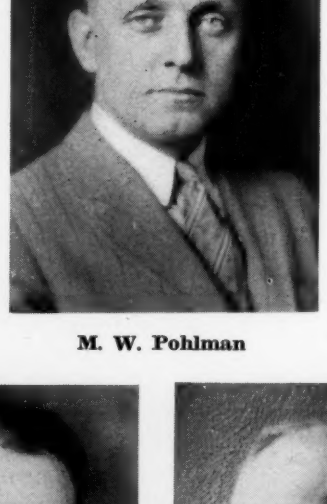
formation otherwise not available.

Saturday morning, Oct. 29, was devoted to demonstrations. H. W. Dietert, Harry W. Dietert Co., Detroit, with the assistance of J. A. Schuch of the same company, demonstrated methods for the rapid determination of carbon and sulphur in irons and steels and also the manipulation and use of the spectrograph in the foundry for rapid routine analysis. A. M. Sampson, Campbell Wyant & Cannon Foundry Co., Muskegon, Mich., described the method used by his company for rapid routine analysis by use of the spectrograph. Following this demonstration, the meeting adjourned to the Civil Engineering building where Prof. R. B. Crepps, dept. of civil engineering, demonstrated the determination of the tensile strength, yield point, transverse and deflection values on iron and steel specimens. He also showed instruments for the determination of hardness and specimens used to determine the impact resistance of metals.

One of the outstanding points of the conference was the interest manifested by students of the university. Many students attended sessions on the various subjects. In one instance, the entire class in foundry practice attended a session of the gray iron program. Students had been invited to attend all sessions and the committee in charge of the conference was gratified at the number that took advantage of the opportunity.

Committee Plans Final Details for Cornell Conference

FINAL details for the Second Northwestern New York Regional Foundry Conference to be held at Cornell University, Ithaca, N. Y., Nov. 25 and 26, now are being planned by the committee. Personnel of the committee, whose photographs are given below, are as follows: *General Chairman*—H. B. Hanley, American Laundry Machinery Co., Rochester, N. Y.; *Representing the Buffalo Chapter of the American Foundrymen's Association*—M. A. Pohlman, Pohlman Foundry Co., chairman of the Chapter, and R. K. Glass, Republic Steel Corp., Buffalo; *Representing the Syracuse Foundrymen's Association*—H. H. Judson, Goulds Pumps, Inc., Seneca Falls, N. Y., and J. L. Lonergan, Morris Machine Works, Baldwinsville, N. Y.; *Representing College of Engineering, Cornell University*—Prof. A. C. Davis. Mr. Hanley's photo appears on inside front cover page.

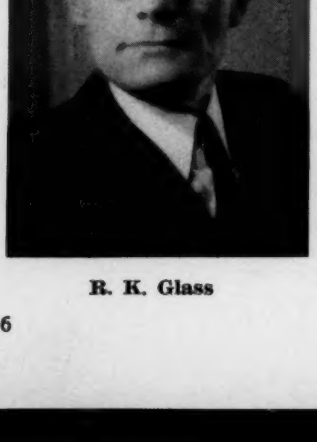


M. W. Pohlman

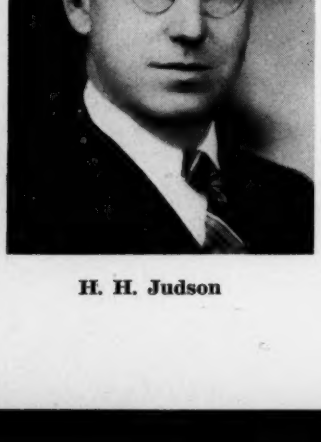
While the program was published in the October issue of *American Foundryman*, certain details were not mentioned. Foundrymen throughout the Northwestern New York territory soon will receive copies of the final program together with room reservation cards. Accommodations are available in Willard Straight Hall on the Cornell campus and in local hotels. To assist the committee in making arrangements for the conference, those planning to attend are requested to send the room reservation cards to Prof. A. C. Davis, Sibley School of Mechanical Engineering, Cornell University, Ithaca, N. Y., as soon as possible after receipt.

The program, as designed by the committee, is one of outstanding merit. The speakers all are recognized as authorities in their respective fields and those attending should gain much worthwhile information. The conference also offers an opportunity to discuss those vexing problems that every shop encounters.

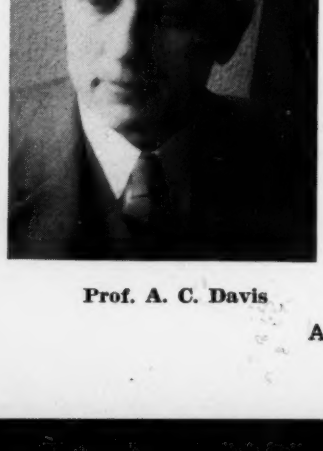
The conference dinner, to be held Friday evening, Nov. 25, will be a source of real enjoyment to those attending. Marshall Post, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., and President of the American Foundrymen's Associ-



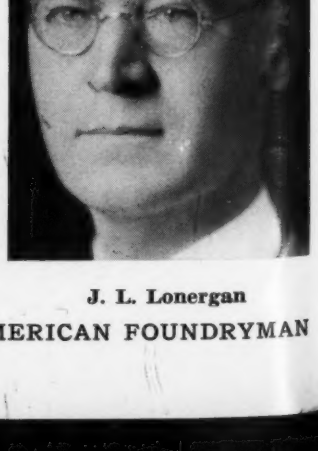
R. K. Glass



H. H. Judson



Prof. A. C. Davis



J. L. Lonergan

ation, will act as toastmaster. S. C. Hollister, dean, College of Engineering, Cornell University, will welcome those attending on behalf of the university and H. B. Hanley, general chairman of the conference committee, will respond. The main speaker of the evening will be J. A. Voss, director of industrial relations, Republic Steel Corp., Cleveland, Ohio.

Musical selections will be presented during the evening by Savage Club quartet and the Rosser Trio. Those who attended the conference last year will remember the excellent entertainment furnished by these musical groups, which have been obtained through the courtesy of Van Loan Whitehead, Jr., Whitehead Bros. Co., Buffalo, N. Y.

A. F. A. To Participate in International Congress

AN OFFICIAL invitation has been received by the American Foundrymen's Association from the Institute of British Foundrymen, to participate in the International Foundry Congress to be held in London, June 12 to 17, 1939. This congress is of the major classification, in which A.F.A. usually participates. Two have been held in this country, in Detroit in 1926, and in Philadelphia in 1934.

Organization of the party from this country to attend this meeting, will be under the direction of the A.F.A. Committee on International Relations, of which Frank G. Steinebach, editor, *The Foundry*, Cleveland, is chairman. Other members of this committee are G. H. Clamer, Ajax Metal Co., Philadelphia; R. S. MacPherran, Allis-Chalmers Mfg. Co., Milwaukee; Verne E. Minich, American Foundry Equipment Co., Mishawaka, Ind.; S. W. Utley, Detroit Steel Casting Co., Detroit, and President Marshall Post, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa. Working with this committee, as its European representative, is Vincent Delport, Penton Publishing Co., Ltd., London.

International foundry congresses were initiated in 1923, the first being held in Paris that year. The movement to organize these congresses on an international basis was stimulated some two years earlier through an arrangement whereby leading foundry technical associations of the world exchanged papers, the first of these being presented by the late George K. Elliott on behalf of the A.F.A. before the Institute of British Foundrymen meeting in 1921. Mr. Elliott's paper was one of the first on melting cast iron in the electric furnace.

To Meet in U. S. in 1942

The International Committee of Technical Associations, meeting in Warsaw, Poland, this year, unanimously accepted the invitation extended by the A.F.A. to hold the International Foundry Congress in the United States in 1942. The invitation was presented by A.F.A.'s European representative, Mr. Delport.

F. A. Melmoth to Present Exchange Paper

FRED A. MELMOTH, vice-president and works manager, Detroit Steel Castings Co., Detroit, has accepted the invitation to present the official exchange paper of the American Foundrymen's Association before the 1939 conference of the Institute of British Foundrymen.

F. A. Melmoth.

Mr. Melmoth is especially well known in American and European foundry circles, being a native of Sheffield, England, and receiving his technical training at Sheffield University. At the University, he held an associateship in metallurgy and was awarded the Mappin Medal for honors in 1913.

English and American Career

From 1908 to 1917, Mr. Melmoth was connected with the Brown Bayleys Steel Works, Sheffield, as assistant metallurgist and steel maker. From 1918 to 1926, he was associated with Lake and Elliott, Braintree, England, and the National Steel Foundry of Scotland, as foundry manager and consultant, respectively. In 1926, he accepted the position of foundry manager, Thos. Firth & Sons, Ltd., Sheffield, which position he held until 1930, when he came to this country, becoming associated with the Detroit Steel Castings Co.

Mr. Melmoth, while residing in England, was prominent in activities of the Institute of British Foundrymen, and was the author of the 1929 Institute exchange paper, presented before the A.F.A. Since coming to this country, he has been prominent in the work of the A.F.A. committees, as chairman of the Steel Division, and has presented several papers before the A. F.A. and other technical associations. He has written many articles on steel castings development for the technical press and at present is national chairman, division operating groups, Steel Founders' Society. Mr. Melmoth is also a member of the American Institute of Mining and Metallurgical Engineers, the American Society for Metals and the Institute of British Foundrymen.

Apprentice Committee to Sponsor 1939 Contest

APPRENTICE molding and pattern making contests, similar to those held in the past, again will be sponsored by the A.F.A. Apprentice Training Committee in connection with the 1939 annual convention to be held in Cincinnati the week of May 15.

The Committee is providing for four classes of contestants—pattern making, gray iron molding, steel molding and non-ferrous molding. Three prizes are available for each group of entrants in the national competition, these being $40.00 for each first prize, $20.00 for each second price and $15.00 for each third prize. The funds for these prizes have been made available from the Association Award Funds on the recommendation of the A.F.A. Board of Awards.

Committee regulations provide for two types of local contests —one under supervision of individual plants and the other under groups of foundries or chapters. One entry in each class may be forwarded to the national contest from the individual plant competitions and three entries in each class from the local group competitions. All apprentices entered must be under regular indentures. Standard patterns for molding contest and blue prints for the pattern making contest are to be supplied by the A.F.A. Committee.

Any firm desiring to stage a local contest is requested to communicate with the Apprentice Committee, American Foundrymen's Association, 222 West Adams Street, Chicago.

J. M. Darke Made Life Member

J. M. DARKE, recently retired as engineer, materials testing laboratory, General Electric Co., Lynn, Mass., has been made a life member of the American Foundrymen's Association. Mr. Darke is a charter member of A.F.A. and for many years took an active interest in the work of the Association.

Notification of Mr. Darke's election to life membership in the Association was presented to him at a Friendship Party in his honor and that of Mrs. Darke on his retirement from active service with the General Electric Company. Mr. Darke retired on Aug. 31 after 46 years of service. Present at the dinner were all employees of the materials testing laboratory and many people who formerly had worked for Mr. Darke.

Presentation of the certificate of life membership was made by E. H. Ballard, general foundry and pattern shop superintendent, General Electric Co., West Lynn, Mass., and past president, American Foundrymen's Association.

Front Cover Picture

THE illustration on the front cover of this issue is the picture of a chill ball casting machine, designed by J. J. Plessman and built by the San Francisco Stove Work, 260-262 Townsend St., San Francisco, Calif. The machine in the illustration weighs 10 tons and was made for export to the Island of Cyprus. The construction of the machine can be seen from the illustration. Dies are opened and closed by air pressure and are cast from a special metal with water circulation tubes cast in them.

Each machine is tested before shipment, which is quite a trick. Hot metal must be transported from the foundry in a special ladle and truck for two miles through busy streets to the erection plant where the machine is tested. Some job, eh what!

George B. Koch, Old Time Member Retires

THE Pennsylvania railroad has announced the retirement from active service of George B. Koch, general foreman of its south Altoona foundries. Mr. Koch is one of the oldest A. F. A. members, joining in 1905. He served on the A. F. A. Apprentice Committee for several years, being particularly interested in training young men in the industry.

December Chapter Meetings*

December 5

Metropolitan New York-New Jersey
Essex House, Newark, N. J.
PAT DWYER—*"Gates and Risers"*

Buffalo
King Arthur's Restaurant

✦ ✦

December 8

Northeastern Ohio
Annual Christmas Party

St. Louis
E. H. KING—*"Molding Sand"*

December 9

Metropolitan Philadelphia
Engineer's Club, Philadelphia
"Radiography"

Northern California
Annual Christmas Jinks

✦ ✦

December 12

Chicago
Medinah Club, Chicago
M. J. GREGORY—*"Producing Gray Iron Castings"*

December 16

Wisconsin
Schroeder Hotel, Milwaukee
Christmas Party

Southern California
Clark Hotel, Los Angeles
Christmas Stag Hi Jinks

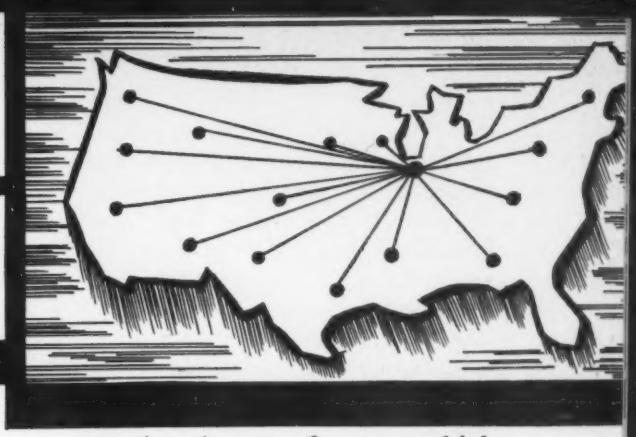
✦ ✦

December 19

Quad City
Blackhawk Hotel, Davenport, Ia.
D. P. FORBES—*"Malleable Iron"*

*Birmingham, Detroit and Ontario Chapters have no meetings scheduled for December. Northern Illinois-Southern Wisconsin Chapter's December meeting will be a Christmas party, date and place to be determined. Dates for Northeastern Ohio and Northern California Chapters' Christmas parties are tentative.

Chapter Activities



Southern California Chapter Hears Talks on Labor and Safety

By M. S. Robb,* Los Angeles, Calif.

LATEST developments in "Labor and Safety in the Foundry Industry" featured the Oct. 27 dinner meeting of the Southern California Chapter held at the Clark Hotel in Los Angeles, Calif. With three prominent speakers, each man an outstanding authority on his subject, the program proved to be one of the most interesting meetings of the Chapter.

John H. Hanson, chief agent, Federal Bureau of Investigation at Los Angeles gave the coffee talk and spoke on "Work of the Federal Bureau of Investigation." He secured the laugh of the evening with his opening remarks that he had been trying to figure out why he had been asked to speak to a group of foundrymen, and thought possibly it might be because his work included the investigation of national bankruptcy cases.

Labor Relations

J. Stewart Neary, a prominent Los Angeles attorney, who had handled many cases before the National Labor Relations Board, spoke on "The Relationship Between Management and Employees as Affected by the National Labor Relations Act." He stated the National Labor Relation Act was here to stay and, although it will be amended from time to time, every management should realize this fact, that it is the law, and begin to govern themselves accordingly. His advice to every foundry owner and management was as follows:

(1) Have a grievance committee in your plant which will permit employees to meet with the management and discuss plant conditions that are not satisfactory. Realize that every employee is a human being—he reacts to good and bad conditions just like everyone else. He wants to be loyal and will be if but given the opportunity to see that he is appreciated. This is the first step management should take in a campaign of education to make every employee realize the problems of management.

(2) The National Relations Act requires that management must sit down and bargain with their employees, and sooner or later, every management will have to do this. Also, as a precautionary measure against future complaints that might be brought before the Labor Relations Board, Mr. Neary advised management that under no conditions to make any statements for or against unions — C.I.O., A.F. of L. or company unions. If a man is promoted or demoted, any verbal remarks should be made before a witness and then recorded in writing for future evidence and reference.

Outlines Procedure

The National Relations Act does not require that any bargaining agreement made with employees be put in writing and the speaker advised that, due to changing conditions, etc., this is not necessary and of questionable value. Also, the National Relations Act does not require the signing of a closed shop agreement. Mr. Neary stated he had sat in on many bargaining conferences with the speaker representing the management and cited the following method he had used so many times in opening these conferences, which in turn had proved to be of great value in ironing out labor problems.

First, on this side of the table we have the management chairs and on the opposite side the chairs of the employees. Now, if the management will sit in the employees' chairs and try to reason from the viewpoint of the man in the plant, and the employees sitting in the management's chairs will keep in mind that they must see the situation and conditions from the standpoint of the management. With a start like this many seemingly impossible problems have been ironed out to mutual satisfaction of management and employees.

Violation a Risk

In reference to the wages and hours law, effective Oct. 24, Mr. Neary stated that after much study and without giving the much involved legal reasonings, he would hazard a "Walter Winchell" and state that he believed the law is unconstitutional. Nevertheless, he advised that the penalties for violation were too drastic for any management to risk violation. He pointed out that any foundry using purchased material that was manufactured in violation of this act, would be held accountable for a violation of the act the same as if the violation had been in their own plant. He advised all purchased material should be made with a warrant by the seller that the goods had been made in accordance with the act and the seller would indemnify the purchaser against any loss due to such violation of the act.

The third speaker of the evening was Robert M. Ryburn, safety engineer, Hollingsworth Company, who spoke on "Foundry Safety Practices and Devices." He emphasized the fact

*Bethlehem Steel Co., and secretary, Southern California Chapter.

that any foundry safety program started with good housekeeping. Wherever a foundry had good housekeeping, a good safety record with accident hazards at a minimum was just a natural sequence.

J. G. Coffman, Chapter Chairman, presided at the meeting which also featured Senor Acosta, the Spanish cavalier, who sang several songs during dinner.

Robert Gregg of Reliance Regulator Company, Chairman of Education and Apprenticeship Committee, announced that negotiations were being made with the Los Angeles School Board with the expected results, that an Apprentice Training Course would be available shortly one or two nights each week at the Manual Arts High School. The co-operation of foundry supply and equipment committees will be asked to furnish some material and supplies for the course. Chairman Coffman appointed the following members to handle arrangements for the first annual joint meeting with the local chapter of the American Society of Metals to be held Feb. 16, with a program which will feature "Casting Aluminum and Aluminum Alloys": John Wilson, Climax Molydbenum Company, *Chairman;* Ed Green, Axelson Mfg. Company, and S. R. Kimberly, Los Angeles Steel Casting Company.

Announcement was also made by G. W. Merrefield, Kay-Brunner Steel Products, chairman, program committee, that tentative plans were being made to hold the Southern California Chapter's first Annual Technical Conference at the University of Southern California, Los Angeles, or the California Institute of Technology, Pasadena, March 24, 1939. It will include technical sessions in the morning and afternoon with separate groups —steel, non-ferrous and gray iron. Joint luncheon at noon with conference dinner in the evening, taking the place of our March dinner meeting. Plans are all tentative, due to the necessity of being assured we can obtain the necessary eastern speakers. Marshall Post, our National President, has signified that he expects to address our March meeting with a talk on the "Cement Molding Process." This would give us an excellent guest speaker for the Conference Banquet.

Northern California Chapter Holds Third Birthday Party

By G. L. Kennard,* San Francisco,

SEQUOYAH Country Club was chosen as the place for the third birthday party of the Northern California Chapter held Oct. 21, because of its location along the southwestern slope on the skyline of the east bay hills.

The committee demonstrated its efficiency by carefully marking the otherwise well known road with *"A. F. A. This Is the Way"* signs at every turn. They even had a sign on the door leading to the check-off table,—yes, and there was one there which was later added to a dozen similar signs in the dining room.

Sequoyah has a real host in Manager Ray McCoy who made every guest feel that he was the life of the party. This spirit was manifest in every one connected with the Club — not omitting John Carse who started the boys off on the sporty course.

Although we had no occasion to use it, every one was impressed with the beauty and view from the South Parlor. As the golfers were primarily interested in the course, they were not conscious of the inside until they had gathered in social groups preliminary to dinner, and then—Oh, Boy!

After every one had cleared with the collector of customs and had his name emblazoned on a coat card, the round-up started.

During Clarence Henderson's term of office, he used to leave it to George Kennard to get the boys in to dinner, but on this occasion it was too much for wee Georgie, so Al Snow was pressed into service, and did those boys get moving! Some, as good scouts, believed in "being prepared" so they went to the dining room full handed.

And what a dining room, and was it lit up. When the boys saw more "A.F.A. This Is the Way" signs decorating every conceivable vantage point they said "Hurrah, this is the place." The sign back of John Fenstermacher's table was upside down. Some asked why. John wouldn't tell, but it was noticed that when he appointed Sam Russell Sergeant-at-arms and Tax Collector, Inc., and gave him a funny little cash register, John put in a U. S. Government bill and said "This ought to straighten me up, and now take down that sign."

The Committee could not handle all the details of unpack-

*Pacific Coast Founders' Association, and secretary-treasurer, Northern California Chapter.

Northern California Chapter Third Birthday Party

ing and arranging the prizes, and needed help; so it is proper to acknowledge the services rendered by Harry Parrock and Phil Kellogg.

And then, we had a couple of aluminum boys there. They were shining lights, and a lot of help.

Pete Valentine, of Del Monte fame, will probably be known from now on as "Guitar Pete the Sand Hill Billy," and he strutted his stuff, too, and got a big hand.

Lending an air of dignity to the occasion was Emory Smith, professor emeritus of chemistry and physics, Stanford University. We felt highly complimented by his presence.

With dinner over, and a word of appreciation to the woman who served it, in comes the man who told us to "look pleasant," and bang, bang, it was all in the bag, as the group picture of sixty-six men shows.

Ed Welch, who had been appointed Chief Handicapper, needed only a pair of long whiskers to make him look like Santa Claus for he sure did pass out a fine array of costly and beautiful prizes, twenty-five in all.

But the prize prize-winner was Wesley Schimmelpfennig ("Wes" for short) who insisted he had never played golf but came with "Guitar Pete" just to caddy. However, the two played all afternoon with one club between them. Wes wins. Pete claims Wes learned to play golf on a Kelly pool table. Wes gets the prize, leaving Pete still behind the "8" ball.

Through the medium of the cash register, prize winners as well as fine winners, contributed substantially to the success of some future party.

The boys felt that George Kennard should be remembered even though he did not play, so they gave him a nice pearl handled jackknife and three slabs of Boot Jack to whittle on, but George is going to pass the Boot Jack to Clarence Henderson. The gang wouldn't believe that George's speech of acceptance had not been rehearsed.

The Committee acknowledges the untiring services of Mrs. Ida M. Patterson, Pacific Coast Founders Association, secretary to George. Her attention to the numerous details was most highly appreciated and not forgotten.

This Golf Tournament was one of the most successful affairs Northern California Chapter of American Foundrymen's Association has ever had, and the committee report shows every bill paid without cost to the Chapter.

The Entertainment Committee consisted of: Chairman Al Snow, Snow & Galgiani, San Francisco; Jack Spillane, Electro Metallurgical Sales Co., San Francisco; Harry Bossi, H. C. Macaulay Foundry Co., Berkley; and Edgar Wilcox, E. A. Wilcox Co., San Francisco.

Northeastern Ohio Goes on Plant Visitation

NEARLY 300 members and guests of the Northeastern Ohio chapter attended the second regular meeting on Oct. 13, which consisted of a visitation to the Republic Steel Corp., Cleveland, to see the firm's new, continuous strip mill in operation. From the strip mill, the group was taken to the Corrigan-McKinney division to visit the blast furnaces while one was making a cast, the pig machine, the ore docks, and the coke plant.

Following the visitation the group adjourned to the cafeteria of the Republic Steel Corp. where an excellent dinner was enjoyed. The meeting closed with a sound motion picture showing the production, fabrication and applications of stainless steel.

Philadelphia Chapter Discusses Castings from the Consumers Viewpoint

By T. J. Fegley,* Philadelphia, Pa.

THE OCT. 14 meeting of the Metropolitan Philadelphia Chapter was held in the Engineers Club, Philadelphia, with Harold Henszey, Carborundum Co., Philadelphia, chapter chairman, presiding. Following the dinner, Dr. H. L. Maxwell, E. I. Dupont de Nemours Co., Wilmington, Del., addressed the meeting on "Castings from the Consumers Viewpoint."

Dr. Maxwell reviewed the general subject of castings in the light of their use by the consumer and spoke particularly about their use in chemical equipment. Consideration was given to acceptance tests, operating service conditions and types of failure in service. His talk was illustrated with some 32 slides.

The subject was divided into three divisions: (1) plain and alloy cast iron, (2) cast steel, (3) stainless steel castings.

It was pointed out that cast iron in chemical service usually failed from one of two causes, that is, either surface attack and corrosion, which is encountered in acid service and usually at high operating temperatures, or growth in service, which is the type of failure most frequently met. This growth usually is accelerated by high temperature operating conditions and because of structural changes going on within the metal, result in an actual permanent increase of dimension in the cast iron castings. It was pointed out that the most economical methods of overcoming these difficulties are the use of cast iron low in silicon and/or the use of chromium-nickel additions in such proportions as to render the structure and properties throughout the casting uniform. Several illustrations were given in which service tests on a plant scale had demonstrated the economy of using low silicon and alloy additions.

Several applications of the use of cast steels to chemical equipment were reviewed and it was pointed out that the desirable

*North Bros. Mfg. Co., and chairman, Publicity Committee, Metropolitan Philadelphia Chapter,

physical properties of cast steels, together with their ready adaptability to intricate designs, make this class of materials desirable and economical for a variety of chemical equipment services. Large cast steel heads for autoclaves and other reaction vessels have been satisfactorily used in a variety of designs. It is expected that extensions will be made to cast steel applications in the construction of chemical equipment.

The subject of stainless steel castings was also discussed from the point of view of composition and heat treatment and particularly how these factors influenced their economical life in service. Special emphasis was placed upon the development of grain boundary attack in stainless castings not properly heat treated.

In a number of applications, the high corrosion rates of stainless alloys in the "as-cast" condition have been reduced to an acceptable rate, permitting their use in chemical processes, by quenching in water from 1950° F. to 2000° F. to absorb the grain boundary carbides. A number of specimens were exhibited to demonstrate the effect of proper heat treatment as influencing the life of stainless steel castings in chemical process service.

As a coffee talk, our secretary-treasurer, W. B. Coleman, W. B. Coleman & Co., gave a most interesting illustrated talk on his trip to Hawaii last year.

Ontario Chapter Goes Trouble Shooting

By G. L. White,* Toronto, Canada

AT THE second meeting of the Ontario Chapter, Toronto, Oct. 21, M. McGuire, George S. Pettinos, Inc., Philadelphia, spoke to a group numbering well over 100 on "Trouble Shooting in the Foundry." The speaker gave timely advice on almost every phase of foundry operation from the design of the pattern to the finishing of the casting. Suggestions were based primarily upon the experience of gray iron foundries, but many also were applicable to steel or non-ferrous casting operations.

Design is one of the most important factors in the production of castings free from warping, shrinking and cracking. Proper design of the casting goes a long way towards ensuring economical, sound products and contributes to better appearance, a characteristic of the casting that is becoming of vital importance in many applications. Another step in the elimination of undesirable shrinkage in the casting, is the use of properly placed internal chills.

Probably 50 per cent of the castings lost in the foundry are the victims of poor gating or pouring. The correct arrangement of gates will remove slag and dirt from the metal entering the mold. Careful pouring, at the optimum temperature and at the best speed for the size of gate and mold will contribute to the production of a sound casting.

Both natural and synthetic sands are used sucessfully in the gray iron foundry, the latter, in particular, requiring careful control and conditioning for the best results. Where sand slingers are employed, the distance of throw of the sand should be kept low since there is a tendency towards the separation of fine and coarse sand in a longer throw. Changes in existing sand slinging equipment, which are easily made, may result in more even packing of the sand in the molds.

Equipment and methods for three different systems of molding were discussed.

Hydraulic cleaning was the principal development mentioned in the finishing of casting in the foundry. Water sprays under very high pressure remove the dirt from the casting and leave it without the coating of dust that is present after sand or shot blasting.

Distinct economies in the cost of cupola refractories may be realized through the proper daubing of cupola walls. Mechanical charging of the cupola is better than manual charging. One of the wasteful errors in cupola operation is the use of too high a blast in starting.

In a lively discussion period much interest centered in the best methods of operation and maintenance of the cupola.

*Canadian Metals and Metallurgical Industries and official reporter, Ontario Chapter.

Chicago Chapter Hears Talk on the International Situation

By L. L. Henkel,* Chicago, Ill.

ON OCTOBER 10, the first meeting of the Chicago Chapter of the American Foundrymen's Association was held at the Medinah Club. Approximately one hundred people attended.

The speaker for the evening was Dr. Walter H. C. Laves, associate professor, political science, University of Chicago, and formerly Director, Midwest League of Nations Association.

Dr. Laves' talk was extremely interesting as well as instructive. He gave a history of events occurring in Europe since the World War, as well as tying these events with the United States. He stated that as the fascist and communistic movements are advancing, they are becoming more or less self sufficient unto themselves, which gradually means a lessening of exports of our goods to these several countries. Dr. Laves discussed the German situation as it existed prior to the Munich Peace Conference and some of the known events that occurred later, as far as he knew them. His talk certainly gave a new slant on international affairs, as well as something which really concerns our individual future liberties and our possible economic setup.

*Interlake Iron Corp., and secretary, Chicago Chapter.

The meeting was called to order by the chairman of the Chicago Chapter, L. H. Rudesill, Griffin Wheel Co., who made some pertinent remarks about our organization as well as presenting the tentative idea of our program for the ensuing year. He asked several men to discuss various features of the organization.

R. E. Kennedy, newly appointed secretary of the American Foundrymen's Association, spoke about the coming convention, which is to be held at Cincinnati, Ohio, May 15 to 18, 1939. In addition, he called on C. E. Hoyt, executive vice president, to make a few remarks.

J. H. Abbott, Hickman Williams & Co., gave a report on the golf tournament and dinner which was held at the Lincolnshire Country Club in September, 1938.

H. W. Johnson, Greenlee Foundry Co., gave a talk as well as calling attention to the program of the Purdue Conference, held on October 27, 28 and 29, 1938. C. C. Kawin, Chas. C. Kawin & Co., treasurer of our Chicago Chapter, gave a report of the finances of our chapter, showing a balance of which the chapter may consider themselves proud.

Molding and Sand Handling Equipment Discussed at Wisconsin Chapter Meeting

By B. D. Claffey,* Waukesha, Wis.

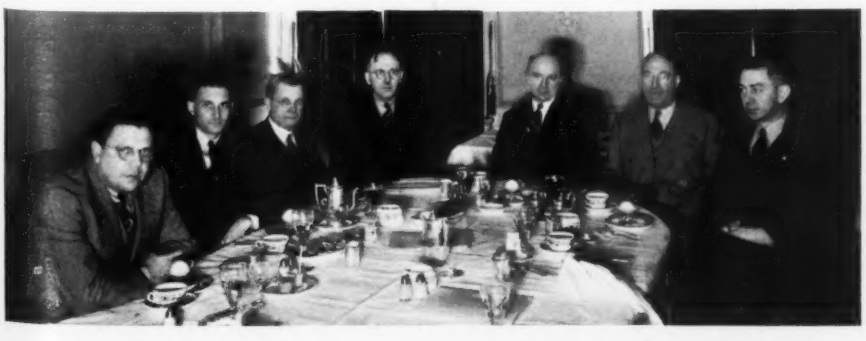
A. F. PFEIFFER, assistant general superintendent of pattern shops and foundries, Allis-Chalmers Mfg. Co., Milwaukee, Wis., was the speaker at the Oct. 21 meeting of the Wisconsin Chapter, held in the Hotel Schroeder, Milwaukee, with Chapter Chairman Roy M. Jacobs, Standard Brass Works, Milwaukee, presiding.

Mr. Pfeiffer gave an illustrated talk on the extensive installation of molding, mold handling, sand preparation and handling and cleaning equipment which has been completed within the past year at the Allis-Chalmers plant at a cost of approximately one million dollars.

*General Malleable Corp., and secretary, Wisconsin Chapter.

The chapter also has decided to hold its second annual regional foundry conference and a committee composed of the following, has been appointed: Co-Chairmen—C. I. Wesley, Wesley Steel Treating Co., Milwaukee, and Prof. E. R. Shorey, University of Wisconsin, Madison, Wis.; R. S. MacPherran, Allis-Chalmers Mfg. Co.; Prof. J. F. Oesterle, University of Wisconsin; David Zuege, Sivyer Steel Casting Co.; Edward Meyer, Chain Belt Co.; W. J. MacNeill, Federal Malleable Co.; S. P. Waltermire, Chain Belt Co.; R. M. Jacobs, Standard Brass Works; B. D. Claffey, General Malleable Corp., Waukesha. The committee met on Oct. 24 and discussed plans for the conference. It was decided that the conference should be of the two day variety and should be held at the Schroeder Hotel, Milwaukee, on the 16 and 17 of February. The conference will be held under the joint sponsorship of the Wisconsin Chapter of the American Foundrymen's Association and the department of mining and metallurgy, University of Wisconsin.

At the first conference under the above mentioned joint sponsorship held last year, the registration was 300. This year the chapter has set as its goal, a registration of 500.



Wisconsin Chapter Regional Conference Committee Meeting. Left to Right: W. J. MacNeill, Federal Malleable Corp.; S. P. Waltermire, Chain Belt Co.; R. S. MacPherran, Allis-Chalmers Mfg. Co.; Prof. E. R. Shorey, University of Wisconsin, Committee Co-chairman; Chas. I. Wesley, Wesley Steel Treating Co., Committee Co-chairman; R. M. Jacobs, Standard Brass Works; B. D. Claffey, General Malleable Corp.

Detroit Chapter Views the Spectograph

By H. J. Deutsch,* Detroit, Mich.

BECAUSE the regular meeting night of the Chapter fell during the week of the convention of the American Society for Metals, the Detroit Chapter changed its meeting date to Oct. 13. The meeting was held in the Fort Shelby Hotel with Chapter Chairman Ira F. Cheney, Griffin Wheel Co., Detroit, presiding.

Due to the change in meeting night, it was impossible to secure the speaker originally scheduled for the meeting. A second speaker was secured but at the last minute, he also had to forgo the pleasure of addressing the Chapter due to illness in his family. However, in spite of all these difficulties, those who attended were more than rewarded as H. W. Dietert, Harry W. Dietert Co., Detroit, was secured as speaker and gave an extremely interesting talk on the operation and use of the spectrograph for routine analysis of metals. In his talk, Mr. Dietert made special reference to the use of this tool in the foundry. Quick methods for the determination of carbon and sulphur in irons and steels also were demonstrated. Mr. Dietert was assisted during the demonstration by Jesse Toth

*Aluminum Co. of America and secretary, Detroit Chapter.

and John Schuch of his company.

Following the demonstration, a great number of questions were asked and certain points required explanation during the discussion period, evidencing that a lively interest had been aroused in the use of the spectograph in the foundry.

Metropolitan N. Y.-N. J. Chapter Enjoys Talk on Microstructure of Cast Iron

By T. J. Wood,* Passaic, N. J.

THE NEW 1938-39 season of the Metropolitan New York-New Jersey Chapter was given an auspicious start at the Oct. 3 meeting at the Essex House, Newark, N. J., with a fine talk by Roy M. Allen, consulting metallurgist, Bloomfield, N. J. Chapter Vice-Chairman W. E. Day, Jr., International Motor Co., New Brunswick, N. J., presided over the meeting, which was attended by some 75 members and guests.

Speaks on the Microscope

Mr. Allen's talk dealt with "The Microstructure of Cast Iron in Relation to Its Physical Properties." Illustrating his discussion with slides, he very clearly developed the course of crystal formation of metals during the freezing period from the molten state and then went on to show how the crystal formation could be modified and varied by altering the composition, speed of solidification or by subsequent heat-treatment. Progressing from this point, Mr. Allen discussed the microstructures of white and gray cast irons and showed how these were related to the physical properties exhibited by these irons. The talk was enhanced by the extraordinary quality of the micrographs shown in the slides.

Discussion centered about the special types of cast iron requiring more than the usual care accorded to the production of ordinary gray iron. One of the interesting points brought out was that in the production of a special type of mine car wheel some years ago, Mr. Allen obtained, as an incidental "by-product," a high test iron of a quality only recently recognized as being commercially feasible.

Attention is called to the fact that the following members have been added to the board of directors of the Chapter: W. G. Reichert, Singer Mfg. Co., Elizabeth, N. J.; Joseph Nevin, Otis Elevator Co., Yonkers, N. Y.; Ernshaw Cook, American Brake Shoe & Foundry Co., Nahwah, N. J.; and R. A. Gezelius, Taylor Wharton Iron & Steel Co., High Bridge, N. J.

*Robins Conveying Belt Co., and secretary, Metropolitan New York-New Jersey Chapter.

Core Room Problems Discussed at Birmingham Meeting

LEROY P. ROBINSON ("Robbie" to you), Werner G. Smith Co., Cleveland, was the principal speaker at the Oct. 21 meeting of the Birmingham District Chapter, held in the Tutwiler Hotel, Birmingham, Ala. Robbie's topic was "Some Common Causes of Core Room Troubles." As the speaker's talk has been given before other Chapters and has been abstracted in these columns on several occasions, it will not be carried here at this time.

Feb. 23 and 24, 1939, have been chosen as the dates for the Sevventh Annual Joint Foundry Practice meeting, sponsored jointly by the Birmingham District Chapter of the American Foundrymen's Association and the Birmingham Section of the American Society of Mechanical Engineers. Tentative subjects to be covered at the sessions include gates and risers, causes of pinholes in stove plate castings and their remedies, nonferrous foundry practice, blast furnace production of foundry pig iron, foundry safety and hygiene, mold washes, chaplets and facings. Speakers have not yet been selected, but the committee is now working on the program.

In all probability, a tentative program will be announced in the near future.

Heavy Cast Iron Sections Discussed at N. Illinois-S. Wisconsin Chapter Meeting

By H. C. Winte,* Beloit, Wis.

THE OCT. 11 meeting of the Northern Illinois-Southern Wisconsin Chapter was held at the cafeteria of the Fairbanks, Morse & Co., Beloit. Prior to the meeting, many members took advantage of the opportunity afforded to visit the plant. The inspection trip was very interesting and contributed much to the success of the meeting.

Following the usual dinner, E. R. Young, Climax Molybdenum Co., Chicago, addressed the Chapter on "Physical Properties of Cast Iron in Heavy Sections." Mr. Young presented a paper on this subject at the 1938 convention of the American Foundrymen's Association in Cleveland. In presenting his subject, Mr. Young reviewed the work described in this paper and elaborated on some of the points that were particularly applicable to castings of the type made in the district.

During the meeting it was announced that the Chapter was co-sponsor with the Quad City Chapter and the Northern Iowa Foundrymen's Association, of the Iowa Foundry Conference. Arrangements were made for a number to attend.

*Fairbanks, Morse & Co., and technical secretary, Northern Illinois-Southern Wisconsin Chapter.

Abstracts

By E. J. Ash, Ann Arbor, Mich.

Alloy Steel

APPLICATION. *"Alloy Steels Designed for Specific Uses,"* V. T. Malcolm, *The Foundry,* vol. 66, no. 8, August 1938, pp. 28-29, 76, 78. Second of three articles on this subject. First article appeared in the July issue. The present article deals primarily with furnace practice and casting technique. It is pointed out that if good sound castings are to be produced habits of carefulness and attention are as important as skill, brawn and theoretical knowledge. Much depends upon close observation of the heat of steel from start to finish. When once a practice has been established, there should be no deviation. Bringing special steel heats to a standard condition before final additions are made is stressed as being very important. Slags are mentioned but not discussed. Three things that largely influence the quality of a casting are composition, casting temperature and rate of pouring. These three are inter-related. The effects of pouring temperatures are discussed. Shrinkage is possibly the greatest trouble that the foundryman has at the present time. It is pointed out that the designer should remember that if a casting can be so designed that it cools uniformly, there will be no shrinkage strains or rupture or possibility of deformation. Foundrymen combat design weaknesses by use of fillets, chills and proper risers. Blowholes and dissolved gases are briefly discussed.

PRODUCTION. *"Production Trends of American Alloy Steel,"* E. F. Cone, *Metals and Alloys,* vol. 9, no. 8, August 1938, pp. 207-209. An attempt is made to clarify the situation as to the data for the production of alloy steels, alloy steel castings, and of corrosion and heat resisting steels.

Aluminum Alloys

TESTING. *"The Effect of Foundry Variables,"* by H. J. Rowe, *Foundry Trade Journal,* vol. 59, no. 1148, August 18, 1938, pp. 119-121. Extended abstract of paper read before the American Society for Testing Materials. It is the purpose of this paper to attempt to clarify and summarize the effects of various foundry variables on the mechanical properties of tension specimens in aluminum alloys. The variables discussed are those encountered in molding practice, gating design, melting and pouring technique, and in the handling of test specimens during trimming and heat treatment. The effect of machining the gauge sections of test specimens is also considered. It is pointed out that many of the variables discussed may not, in themselves, result in a sufficient reduction in the strength of aluminum alloy test specimens, to be considered serious. It is quite possible, however, to reduce tensile strength of aluminum alloy test specimens as much as 40 per cent by the cumulative effect of the conditions considered.

Aluminum Bronze

CASTING. See Non-Ferrous.

Calcium

PROPERTIES. *"Properties of Calcium,"* by Paul Bastien, *The Metal Industry (London),* vol. 33, no. 1, July 1, 1938, pp. 3-4. Calcium is extracted electrolytically from fused anhydrous chloride. Further refining is carried out by sublimation in vacuo. Owing to its lack of corrosion resistance, calcium has not found any application as a base metal in industrial alloys. It has found uses as a deoxidizer, refining agent or an addition agent, especially in various lead-base alloys. Calcium has an affinity for oxygen, sulphur and arsenic and is used in producing some alloys. Used as a deoxidant for copper, it gives a metal of very high electrical conductivity; also used for deoxidizing and desulphurizing metal. This element is added to lead for hardening purposes. It is predicted that modern methods of refining will bring many new applications for this metal.

Car Wheels

WHITE IRON. See White Iron.

Cast Iron

APPLICATION. *"Cast Iron in Engineering Construction—III,"* J. L. Francis, *Iron and Steel Industry,* vol. XI, no. 12, August 1938, pp. 562-567. This article is continued from the June issue. In this article the author continues his discussion on tests, discussing the effect of section size and shape on transverse strength; ratio of tensile to transverse; compressive strength; shear strength; ratio of shear to tension; fatigue strength; damping capacity; graphite and notch effects; and structure and cooling rate.

CUPOLA. *"Chemical Changes in Cast Iron in the Cupola,"* J. T. MacKenzie, *Foundry Trade Journal,* vol. 59, no. 1144, July 21, 1938, pp. 43-47, 54. Practical discussion of cupola operation. The paper deals with work done by the author and his collaborators in his own plant. The variables in cupola melting are listed as follows: (1) The metallic charge—its chemical composition and the ratio of its surface to weight or, generally, the size of the pieces; (2) the fuel, its composition, size, shape and structure, and its weight in proportion to the iron; (3) the blast—its temperature, moisture content and velocity (local as well as mean); (4) the structural details of the cupola; and (5) the amount and quality of the flux. The most important changes in the iron are: (1) the oxidation of iron, carbon, silicon and manganese and (2) the absorption of carbon and sulphur. The reactions in the stack are discussed as are hearth reactions; temperatures; influence of coke and coke size; and the effect of coke ratio. There are included 14 figures and seven tables. The entire article is filled with facts and it is recommended for study.

PICKLING. *"Modern Pickling Practice,"* W. G. Imhoff, *Metal Cleaning and Finishing,* vol. 10, no. 7, July 1938, pp. 474-485, 514. Part 3 of a series of pickling articles. The topic of acids is concluded in this installment with discussions of hydrofluoric acid and nitric acids. A discussion of pickling procedure of many materials is given. The pickling of various kinds of castings has given considerable trouble. A pickle for treated castings is a mixture of muriatic and hydrofluoric acids, used cold, time required about 10 minutes. Threads are not harmed. A pickle for gray iron castings is (quick) 1 part hydrofluoric acid and 20 parts of water, and (slow) 1 part hydrofluoric acid and 30 parts of water. Tumble after pickling. Other pickling solutions are suggested.

SAND DEFECTS. *"A Study of Mold Surface Defects,"* H. W. Dietert, *Foundry Trade Journal,* vol. 59, no. 1145, July 28, 1938, pp. 70, 72. In this short but very informing article, the author describes his method of determining the behavior of molding sands at high temperatures. By actual demonstration, the nature of rattails and scabs is demonstrated. Expansion and contraction of a molding sand should be at a minimum to secure the best dimensional stability of the sand. This type of sand has greatest freedom from casting defects. These tests will probably yield more practical information than any other test on sand. Eight figures, three tables and five photographs are included.

VISCOSITY. *"Viscosity Measurement on Molten Iron,"* *Foundry Trade Journal,* vol. 59, no. 1149, Aug. 25, 1938, p. 143. Abstract of article appearing in *"Stahl und Eisen."* A practical method is described for evaluating viscosity of cast iron tapped from a blast furnace.

Cast Metals

GASES. *"Gases in Metals and Their Influence,"* H. Lepp, *Metal Industry* (London), vol. 53, no. 5, July 29, 1938, pp. 103-107; No. 6, Aug. 5, 1938, pp. 131-136. Concluding abstract. In his conclusion the author points out that the properties that are most unfavorably affected are the elongation, the impact test and reduction of area. But on the other hand, it seems that the presence (within certain limits) of reducing gases is advantageous in the case of certain metals and alloys destined for operations involving hot deformation. Particularly disastrous is the co-existence of oxides with reducing compounds (hydrides, nitrides, carbides, etc.) which are generally formed following absorption of oxide gases (SO_2, H_2O, CO_2). These articles are very good.

Centrifugal Casting

STEEL. See Steel.

Corrosion

PROTECTIVE COATINGS. *"Corrosion Resistance—Available Protection Processes Reviewed,"* *Foundry Trade Journal,* vol. 59, no. 1148, Aug. 18, 1938, pp. 124-126. Fifth report of the corrosion committee, published recently by the Iron and Steel Institute. A questionnaire on the lives of

coatings indicated that sea air seemed to have no markedly adverse effect on galvanized coatings, whereas, painted fences seem to fail more rapidly at the seacoast than inland. The protection of steel by other than paint is discussed at some length. The following coatings are discussed: Electro-deposits of zinc; cadmium plating; nickel plating; chromium plating; sprayed aluminum coatings; sprayed zinc coatings; sherardizing and calorizing; aluminum dipping; nickel-cladding; hot galvanizing and gun blacking. The results of intermittent sea water spray test are given for each type of metallic coating.

EROSION. See Erosion.

Crucible Life

NON-FERROUS. See Non-Ferrous.

Cupola

MELTING. See Cast Iron.

SMOKE ABATEMENT. See Smoke Abatement.

Die Casting

NON-FERROUS. *"Tully Automatic Pressure Die-Casting Machine,"* by A. Stager, *Foundry Trade Journal,* vol. 58, no. 1141, June 30, 1938, pp. 544. A brief description of machine for die casting. Five figures are given illustrating briefly the working mechanism. This automatic machine is especially suitable for rapid mass production of small and medium pieces of zinc, lead and tin alloys. Number of shots per minute with suitable castings reaches 1500. Dies may be exchanged within 10 minutes. Machine can be operated by one unskilled workman who has only to operate a single lever to start or stop the machine. Die castings up to

Erosion

CAVITATION. *"Cavitation Erosion of Cast Metals and Alloys,"* J. W. Donaldson, *Foundry Trade Journal,* vol. 59, no. 1146, Aug. 4, 1938, pp. 88-89; no. 1147, Aug. 11, 1938, pp. 99-100, 102. This article discusses the nature of cavitation erosion, gives the theory of its formation and describes the types of cavitation-erosion apparatus in use. Experimental investigation of this phenomenon is still in its early stages. German and American investigations are briefly described. Vibratory experiments are also touched upon. The article is accompanied with 9 tables of data.

Gases

IRON AND STEEL. *"Hydrogen in Iron and Steel," Foundry Trade Journal,* vol. 59, no. 1147, Aug. 11, 1938, p. 97. Editorial. The behavior of hydrogen in iron and steel is discussed. It is pointed out that the information on this subject is meager in the literature, yet it is of importance. Mention is made of Sievert's work, who discovered that a pound of iron at its melting point is capable of dissolving between 3,500 and 4,000 cubic feet of hydrogen.

Hardness

MEASUREMENTS. See White Iron.

Malleable Iron

DEVELOPMENT. *"Development of Malleable Iron Wheels Was Rapid," Steel,* vol. 103, no. 7, Aug. 15, 1938, p. 50. A brief note on the production of malleable wheels. From the manufacturing point of view, rapid production of smooth, thin, true-to-pattern surfaces are possible without sacrificing quality or machinability.

Melting

CAST IRON. See Cast Iron.
NON-FERROUS. See Non-Ferrous.
STEEL. See Steel.

Nickel Bronze

FOUNDING. See Non-Ferrous.

Non-Ferrous

ALUMINUM BRONZE. *"The Casting of Aluminum Bronze,"* H. J. Miller, *The Metal Industry,* vol. 53, no. 7, Aug. 12, 1938, pp. 147-152; no. 8, Aug. 19, pp. 175-180; no. 9, Aug. 26, pp. 199-202. In these articles the author discusses the general requirements for the production of sound castings, including preparation of melts, melting equipment, pouring and casting practice, crucible melting and charging of materials. General requirements in sand casting practice are reviewed, including gating arrangements, the provision of chills and molds and mold materials. Aluminum bronzes are compared with manganese bronze and some applications of the former castings are cited. The subject of permanent mold castings is also dealt with. Centrifugal castings, die-casting, which term includes both pressure and gravity casting, are discussed, including the general scope of die-casting, mold materials and protection of molds, along with the mechanical properties and applications of gravity die-castings. The material in this article is very practical and should be of interest to the foundryman.

CRUCIBLE LIFE. *"Lengthening Graphite Crucible Life,"* E. R. Thews, *Foundry Trade Journal,* vol. 59, no. 1149, Aug. 25, 1938, pp. 141-142. The life and operating capacity of graphite crucibles depend on their treatment before and during the period of operation, as well as on quality, as adapted to the operating conditions in question. The author gives fifty rules for treatment and handling, covering (1) care of new crucibles, (2) first-heat precautions, (3) furnace conditions, (4) coke specifications, (5) fluxes, (6) handling hot crucibles and (7) reclamation of old crucibles.

MELTING. *"Non-Ferrous Melting,* N. K. B. Patch, *The Foundry,* vol. 66, no. 8, August 1938, pp. 31, 84, 86. Practical. Mixing and melting of brass alloys are especially discussed. It is pointed out that preheating the charge is advantageous if this can be accomplished without gas absorption. Cleaning gates and risers of sand is also recommended. Thickening of slag with floor sand is severely condemned. In case of dirty metal, pigging and remelting for casting production is suggested. In producing copper-tin alloys, the copper should first be deoxidized with phosphor copper, zinc or manganese before adding tin. Directions are also given for melting yellow brass and manganese bronze. Yellow brass scraps should be charged into the crucible with the copper ingot as it hastens melting of the latter. In order to be able to reproduce analyses, standard practice should be adopted. The melting of aluminum bronze castings is described.

NICKEL BRONZE. *"Founding of Nickel-Bronze and Allied Alloys,"* F. Hudson, *Foundry Trade Journal,* vol. 59, no. 1144, July 21, 1938, pp. 41-42; no. 1145, July 28, 1938, pp. 65-67. Nickel additions are made to bronze and allied alloys in amounts varying from 0.5 to over 50 per cent, and the methods to be adopted in the practical founding of these alloys depend to a large degree upon the quantity of nickel present. This discussion considers the subject under three group headings: (1) Small additions of nickel up to 5 per cent; (2) additions of nickel between 5 and 10 per cent, and (3) additions of nickel over 10 per cent. Up to 5 per cent no special precautions need be taken, apart from those coincident with the production of high-quality non-ferrous castings. Small additions of nickel improve the mechanical properties, promote solidity, homogeneity, grain refinement, and give wider latitude in pouring temperature, thus tending to simplify foundry operations. Melting, pouring and molding procedures are given for alloys between 5 and 10 per cent nickel as well as compositions containing over 10 per cent nickel. It is stated that all nickel-bronzes have a high degree of fluidity, and that these castings have good detail.

Patternmaking

FINISHES. *"Pattern Colors and Varnishes,"* G. Godel, *Foundry Trade Journal,* vol. 59, no. 1145, July 28, 1938, pp. 61-62. Paints or varnishes used on patterns ought not to be so thick as to augment the dimensions of the pattern; must be waterproof, and therefore not subject to age-cracking; must not be sticky, must not adhere to the sand and have resistance to wear. In this article, tests are described on lacquer varnishes, enamels and cellulose paints. Samples were tested for thickness of film, permeability, artificial aging, wear resistance and for adherence to sand and the elasticity of the varnish. The cellulose paints tested, except the black, were found quite useful, and offered high resistance to wear. The nature of the tests may be found quite useful. Pattern colors are not only used to distinguish core prints from machined surfaces, etc., but also to indicate the type of metal to be cast into the mold.

Pickling

CAST IRON. See Cast Iron.

Protective Castings

CORROSION. See Corrosion.

Sand

CONTROL. *"Practical Value of Controlling the Properties of Molding Sands at Elevated Temperatures,"* R. F. Hudson, *Foundry Trade Journal,* vol. 59, no. 1146, Aug. 4, 1938, pp. 79-80. In this short paper is given the more practical experiences of the author indicating that by controlling the composition of the molding sands, and so incidentally controlling the expansion and other variable properties at high temperatures, better castings are produced. Although expansion and contraction characteristics are not the only important variable, it is pointed out that given a sand with satisfactory high temperature properties and another sand without, the sand with good properties will always produce a much superior casting. The author supports his contention by means of practical tests.

DEFECTS. See Cast Iron.

Smoke Abatement

CUPOLA. *"Catch Cupola Smoke," The Foundry,* vol. 66, no. 8, August 1938, pp. 32-33, 86. This article will interest those who are confronted with elimination of dust, smoke, flame and cinders from their cupolas. A method of removing these by means of modified dust arresters is described briefly. The total operating cost for two cupolas per day is about $4.00 (water, oil and power).

Steel

CENTRIFUGAL CASTING. *"Ford Motor Develops Centrifugal Steel Casting," Automotive Industries,* vol. 78, no. 24, June 11, 1938, pp. 782-783. This article briefly de-

scribes the centrifugal casting of rear axel ring gears and transmission cluster gears. Although economy is an objective, quality of the finished gear is equal to forged gears. In forgings, the flow lines are parallel to the forces imposed on a gear tooth, whereas, in a casting, structure in the metal runs perpendicular to the forces which gear teeth are subjected to in actual practice. Molds for the ring gear are spun at 600 r.p.m. and 800 r.p.m. for the transmission gear blank. Eventually it is expected that the process will be adapted to the production of many parts, now being forged, which in form are approximately cylindrical and symmetrical about one axis. The article has 4 illustrations and two micrographs.

MELTING. *"Open-Hearth Control,"* M. J. Bradley, *Steel,* vol. 103, no. 9, Aug. 29, 1938, pp. 34-36, 60. This article indicates how automatic equipment for control of open hearth operation has enabled many furnaces to produce a better quality of steel at about half the former energy consumption. Some of the automatic equipment being used includes reversing by the temperature-difference method, furnace pressure control, automatic roof temperature-limit control and bath temperatures.

TOOLS. *"Cast Tools,"* by S. A. Kazew and L. P. Ermoshkin, (*Metallurgist,* Russia, vol. 12, no. 2, Feb. 1937, pp. 78-85, in Russian). Abstract from *Iron and Steel Industry,* vol. 11, no. 10, June 1938, pp. 494. The authors describe the successful production of milling cutters by casting from steels containing carbon 0.72-1.90 per cent, chromium 4.6-15.17 per cent, vanadium 0.15-0.49 per cent and tungsten 1.62-19.39 per cent. The techniques of molding, melting and casting are described.

Steel Castings

PURCHASING. *"The Purchase of Steel Castings," Iron and Steel Industry,* vol. XI, no. 12, August 1938, pp. 555-556. The writer of this article stresses several factors that are of importance in producing steel castings. It is pointed out that machinery of castings at the plant in which they are made would be beneficial in several ways. Patterns for castings are discussed. The necessity of consulting the steel founder relative to design is also stressed.

SOLIDIFICATION. *"Interdendritic Pipe in Steel Castings,"* Albert M. Portevin, *Metal Progress,* vol. 34, no. 2, August 1938, pp. 152-153. The strength of castings depends not only on chemical analysis, but also upon the compactness of the metal, the absence of porosity or defects in continuity, often microscopic in nature. These micropipes are formed during the solidification period by the retreating flow of liquid through the entangled dendrites, locating them near the major pipe, or by the contraction on freezing of the last portion of the liquid enclosed by surrounding partitions. The pressure of these voids may be determined by density measurements, but the preferred method is the determination of tensile characteristics. These small sharp-angled cavities act as so many notches provoking cracking and breaking during plastic flow. As a result, the elongation and reduction of area are considerably decreased. Forging such pieces so contaminated increases these properties by welding up the cavities. To avoid micropipes in casting, foundry operations must be carefully controlled, such as feeding of the molds, chilling, casting temperature, choice of metal, and even size and shape of the cast part if necessary. Two other requirements are necessary in alloy steels (a) choice of steel having hardenability adapted to the thickness of the part, (6) sound metal to avoid intergranular fracture or slipping.

Testing

ALUMINUM ALLOYS. See Aluminum Alloys.

Training

INDUSTRY. *"Training for Industry,"* by W. R. D. Jones, *Iron and Steel Industry,* vol. 11, no. 10, June 1938, pp. 467-470. An able article on the desirability and type of educational training that should be afforded young men fitting themselves for industrial work. The author has written from the point of view of metallurgical industries in general, and much of the content is applicable to young foundrymen. The article is of interest to both student and employer. In order to keep pace with modern demands and development, technically trained men are essential. It is pointed out that a man with a scientific mind is not necessarily a man full of technical education, but one who thinks in an orderly manner brings order out of chaos. It is stated that the type of student who can be expected to do well in industry should possess good sound common sense, good general knowledge and a sound college record and those high personal characteristics which are developed by a good home life and general refinement and possess that difficulty defined "commanding personality—an ability to lead and be recognized by his companions as a leader." A number of interesting phases relative to the training of the young men is featured in this article.

Viscosity

METALS. See Cast Iron.

White Iron

CAR WHEELS. *"Trains Run on Chilled Car Wheels,"* Pat Dwyer, *The Foundry,* vol. 66, no. 8, August 1938, pp. 22-24, 62. In this article, the first of three, the author gives the early history of rail transportation and the background of the founder of the Griffin Wheel Company organization. Recent improvements in charging and melting operations are also touched upon.

HARDNESS. *"Note on the Hardness Measurements of Very Hard Steels and White Cast Irons,"* J. S. Vanick and J. T. Each, *Foundry Trade Journal,* no. 1149, Aug. 25, 1938, pp. 133-134, 135. From a paper presented at the 1938 A. S. T. M. meetings. In this article is reported some of the data obtained in investigating the problem of measuring by various means, the hardness of irons and steels which possess high hardness and in comparing the values so obtained. Eight figures are given.

PROPERTIES AND USES. *"Properties and Uses of Chilled Iron,"* S. C. Massari, *Foundry Trade Journal,* vol. 59, no. 1147, Aug. 11, 1938, pp. 105-108. Extended abstract of paper read before the American Society for Testing Materials. The author discusses the technique of production, effect of total carbon, influence of silicon, microstructure of chilled iron, heat-treatment, detection of internal stresses, structural refinements, the elements that reduce depth of chill: carbon, silicon, aluminum, titanium, cobalt, nickel, copper and zerconium; the elements increasing depth of chill: chromium, manganese, vanadium and molybdenum; alloy combinations and uses of chilled iron. Chilled iron finds application where resistance to wear and deformation under high intensities of pressure are the essential requisites. In addition to railroad cars, chilled iron is also used for heavy duty castings for coal crushing, grinding mill liners, grinding balls, cement grinding machinery, jam crusher plates, stamp mill parts, etc. In general, the subject matter is quite thoroughly covered in this article.

Statement of Ownership

Statement of the ownership, management, circulation, etc., required by the acts of Congress of August 24, 1912, and March 3, 1933, of American Foundryman, published monthly at Chicago, Ill., for October, 1938. State of Illinois, County of Cook, ss. Before me, a notary public in and for the State and county aforesaid, personally appeared R. E. Kennedy, who, having been duly sworn according to law, deposes and says that he is the Editor of the American Foundryman, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, to-wit: 1—That the names and addresses of the publisher, editor, managing editor, and business managers are, Publisher, American Foundrymen's Association, Inc., Chicago, Ill.; Editor, R. E. Kennedy, Chicago, Ill.; Managing Editor, N. F. Hindle, Chicago, Ill.; Business Managers, None. 2—That the owner is American Foundrymen's Association, Inc., not for profit; stock, none. Principal Officers, M. Post, President, c/o Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.; C. E. Hoyt, Executive Vice President, Chicago, Ill.; R. E. Kennedy, Secretary, Chicago, Ill. 3—That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None. 4—That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him. R. E. Kennedy, editor. Sworn to and subscribed before me this 28th day of Sept. 1938. (Seal) Jennie Reininga, Notary Public. (My commission expires Feb. 9, 1942.)

Wants Bound Volumes

PROF. E. G. MAHIN, head, department of metallurgy, University of Notre Dame, Notre Dame, Ind., desires to secure Volumes I to XIX of Bound Volumes of Transactions, American Foundrymen's Association, for the library of the university department of metallurgy.

Any member who may have these volumes in either the bound or unbound form, if the text is in good condition, please address Dr. Mahin at the university.

FUNDAMENTAL FOUNDRY INFORMATION

Available in A. F. A. Publications

Testing and Grading Foundry Sands and Clays

208 pp., 6x9, (1938, Fourth Edition). Cloth Binding. Price $4.00. Member's price $2.00.

Standards and tentative standards for testing and grading foundry sands and clays adopted by the A.F.A., as prepared by the Committee on Foundry Sand Research. Covers sampling, test methods for permeability, strength, fineness, mold hardness, dye absorption, sintering, core properties, methods for chemical analyses, and grading classifications. Equipment described.

Tentative Code of Recommended Practices for Testing and Measuring Air Flow in Exhaust Systems (1937). Price $1.00. Members' price, 50 cents.

Gives the general type of instruments and technique employed in determining volume and velocity of air flow in exhaust systems. Covers the application and testing technique for pitot tubes, inclined and vertical manometer gauges, revolving vane type anemometers and swinging vane type direct reading velocity meters. Thirteen accurate drawings depict the methods described.

Tentative Code of Recommended Practices for Grinding, Polishing and Buffing Equipment Sanitation (1937). Price $1.00. Members' price, 50 cents.

Gives recommended practices for ventilation of grinding, polishing, buffing, scratch brushing or abrasive cutting-off wheels, grinding or polishing straps or belts. A series of definitions is followed by sections on applications for hood and branch pipe requirements, design of exhaust systems, testing exhaust systems, hood and enclosure design and data on air velocity required. Numerous illustrations will aid engineers to design effective equipment to meet plant requirements.

Tentative Recommended Good Practice Code and Handbook on Fundamentals of Design, Construction, Operation and Maintenance of Exhaust Systems (1938).

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Third of a series of codes for the control and abatement of occupational disease. Gives complete engineering information. The exhaust systems are detailed on an engineering basis. Will be useful in the purchase of new equipment or exhaust systems, and in the revision, to make more efficient, present systems. Shows how to do the job intended at a minimum cost. Research work performed in developing this code gives entirely new information and data on resistance losses of friction in straight pipes and elbows. Complete with almost 200 pages, including 35 charts and engineering diagrams. Appendix gives an example of an exhaust system completely worked out, step by step, showing the proper use of all rules and formulae given in text.

Pearlitic Malleable Cast Iron

An A.S.T.M. publication. 32 pp., 6x9, (1936). Price $0.60; to A.F.A. and A.S.T.M. members $0.35.

Compiled from various sources by a special committee of the A.S.T.M. Covers classification, producer's data on various classes and patent literature. Considered of much value to those interested because published data since 1923 is largely in patent papers.

Steel Casting Design for the Engineer and the Foundryman, by C. W. Briggs, R. A. Gezelius and A. R. Donaldson.

Heavy paper binding, 68 pp., 6x9, (1938), 56 illustrations. Price $0.50.

Steel casting design considered from two viewpoints, that of the designing engineer and that of the foundryman. A code, or nucleus, of a set of rules is presented for the engineer's guidance and experimental results on padding, external and internal chills, and controlled directional solidification are reported as of interest to foundrymen.

The Influence of Design on the Stress Resistance of Steel Castings, by R. A. Bull.

Heavy paper binding, 62 pp., 6x9, 22 illustrations, (1937). Price $0.50. To members $0.35.

A report prepared under direction of A.F.A. Steel Division Committee. Containing assembled data for the guidance of those who use and manufacture steel castings.

Silicosis in the Foundry Industry, by Dr. Leonard Greenburg.

Heavy paper binding, 36 pp., 6x9, (1938). Price $0.25.

Paper and discussion presented before 1938 Cleveland Convention. Paper outlines the results of a survey conducted by the Division of Industrial Hygiene, New York State Department of Labor, of which the author is executive officer. It records the results of examination of over 4000 men employed in the foundries of New York State. The total represents more than one-third of the total employed in one-third of the total foundries distributed according to the size of the foundry. A convincing argument that the silicosis danger in foundries has been over-emphasized.

Electric Power Costs in the Foundry

Planographed, 26 pp., 8½x11, (1933). Price $1.00.

Report of conference on electric power costs, prepared by an A.F.A. committee on this subject. Presents comprehensive data obtained from survey made to cover conditions existing in the various states, with 129 foundries reporting. Data covers demand charges, k.w.h. ratio, ratio of total bill to demand charge, power factor and per cent of selling price of castings represented by power costs. Extensive discussion.

Present Status of Foundry Sand Investigation and Control, by W. G. Reichert, (1935).

Price $1.00. Member's price $0.50.

This is a complete review of foundry sand control by a metallurgist who has established sand control in his plant on practical, economical basis. A publication which everyone connected in any way with the use of sands should have in his handy reference file. It shows how testing and grading methods should be applied, the essentials of sand control for molding and core rooms, the laboratory and the superintendent's office. Written in understandable style for the practical shop man, yet is of the greatest value to the foundry engineer.